



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/729,513	12/04/2000	Sanjay K. Yedur	E0802	4563

7590 06/30/2004

Himanshu S. Amin
Amin, Eschweiler & Turocy, LLP
National City Center 24th Floor
1900 East Ninth Street
Cleveland, OH 44114

EXAMINER

FERNANDEZ, KALIMAH

ART UNIT	PAPER NUMBER
----------	--------------

2881

DATE MAILED: 06/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

9

Office Action Summary	Application No.	Applicant(s)	
	09/729,513	YEDUR ET AL.	
	Examiner	Art Unit	
	Kalimah Fernandez	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5,7-14,16-19 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,7-14,16-19 and 21-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat No 6,181,097 issued to Li et al and in view of US Pat No 5,546,374 issued to Kuroda et al.

4. In regard to claims 1 and 13-14, Li et al teach a system for repairing defects in a semiconductor substrate (col.6, lines 51-53).

5. Li et al teach a scanning probe microscope (col.3, lines 43-45) that has a measuring tip and a scribing tip (col.3, lines 57-65).

6. Li et al teach a defect repair system that repairs defects in a substrate by application of a voltage of the scribing tip at a location determined by the scanning probe microscope (col.6, lines 34-36; col.6, lines 55-61).

7. Li et al teach defect locations and the substrate itself are mapped into a grid each portion of which corresponds to an XY position (see fig.5; col.6, lines 37-44).

8. Li et al does not explicitly teach the application of a voltage to the substrate. However, Kuroda et al teach the application of a voltage difference between the tip and substrate (col.3, lines 35-39).

9. It would have been obvious to an artisan having ordinary skill at the time the invention was made to combine the teachings of Li et al and Kuroda et al since Kuroda et al teach minimizing contamination (col. 1, line 64-col.2, line 2).

10. As per claims 3 and 16, Li et al teach the defects are mechanically removed from the substrate using the scribing tip (col.6, lines 10-16).

11. As per claims 4 and 17, Both Li et al and Kuroda et al teach scanning probe microscopy encompassing an atomic force microscope (see col.1, lines 16-19 of Li et al and col.1, lines 15-27 of Kuroda et al).

12. As per claims 5 and 18, Li et al teach the scribing tip of the scanning probe microscope has a diamond tip (col.6, lines 1-3).

13. As per claims 7 and 21, Kuroda et al teach the voltage difference causes defects to be oxidized away (col. 3, lines 16-23). In addition, Li et al teach oxidization inducement (col.4, lines 40-43).

14. As per claim 11, Li et al teach the measuring tip (26) has a fixed position relative to the scribing tip (24) of the scanning probe microscope (col.3, lines 57-65; see fig. 5).

15. As per claim 12, Li et al teach the defect repair system receives a defect map generated using the scanning probe microscope (col.

16. Claims 8 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the obvious combination of Li et al and Kuroda et al as applied to claims 1 and 14 above, and further in view of US Pat No 4,747,698 issued to Wickramasinghe et al.

17. The obvious combination of Li et al and Kuroda et al teaches the claimed invention except for heating the scribing tip. However, Wickramasinghe et al teach heating a probe tip (col.7, lines 40-55).

18. It would have been obvious to an artisan having ordinary skill at the time the invention was made to combine the teachings of Wickramasinghe

et al into the obvious combination of Li et al and Kuroda et al because Wickramasinghe et al teach the advantage of measuring the thermal properties of materials (col.5, lines 20-46).

19. Claims 9-10,12, 19, and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the obvious combination of Li et al and Kuroda et al as applied to claims 1 and 14 above, and further in view of US Pat No 6,232,597 issued to Kley.

20. The obvious combination of Li et al and Kuroda et al teaches the claimed invention except for obtaining both topographical and compositional information concerning the substrate in claims 9 and 24, and receiving a defect map generated using scanning probe microscope as in claim 12.

21. However, Kley teaches obtaining both topographical (col.4, lines 59-62) and compositional information (col.9, lines 60-67; col.11, lines 60-63). Kley teaches also receiving a defect map generated using scanning probe microscope (col.21, lines 4-64).

22. It would have been obvious to an artisan having ordinary skill at the time of the invention to incorporate the teachings of Kley into the obvious

combination of Li et al and Kuroda et al because Kley teaches improved accuracy (see col. 2, lines 12-21).

23. As per claims 10,19 and 25, Kley teaches the system creates an electrostatic charge in a portion of the substrate (col.4, lines 40-45).

24. As per claim 23, Kley teaches the step of determining the approximate location of defect with another instrument prior to the step of determining the defect's location using the scanning probe microscope (col.7, lines 14-24).

25.

Conclusion


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Pat No 5,702,849 issued to Sakata et al and US Pat No 6,366,340 issued to Ishibashi et al are considered relevant to the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kalimah Fernandez whose telephone number is 571-272-2420. The examiner can normally be reached on Mon-Tues 6:30-3:30; Wed-Thurs 8-5 and Fri.9am-6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 571-272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

kf


JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800